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ART. I. On the Principles of Design. By T. SOPWITH, Esq., F.G.S.,
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THE works of human art are distinguished from those of instinct, not less by the variety of objects which they combine, than by the various degrees of excellence with which these objects are fitted for their respective purposes. Perfect fitness for the proposed object is an attribute of works of instinct; and in them useless ornament is unknown. Works of human art are conducted under the influences of a more uncertain and erring guide. Gifted with reason, man confines not his operations to his immediate wants, but aspires to enjoyments of various kinds, foreign from his nature as an animal, but proudly indicative of the high intellectual endowments bestowed upon him. He mounts into the air, penetrates the chambers of the earth, and dives to the deep abyss of ocean. In the many and varied achievements of human art, we see constantly the operation of design; which is developed in the savage as well as the accomplished artist; the same in nature, but different in degree. Design, in its most comprehensive sense, includes whatever is undertaken by man, as a reasoning creature; but, in its more restricted sense, it is applied to works of contrivance in mechanism, and in the fine and useful arts. Its range, therefore, extends over the whole field of the arts and sciences; and the principles which apply to this science are closely interwoven with the history and study of the human mind. In the present paper it is proposed to consider some of the general principles of design with reference to architecture; which, more than any other art, seems to have lost much of its dependence on first principles, and to have become merely an art of imitation. An elaborate view of so comprehensive a subject would require much time and ability: it may, however, be interesting, to take a rapid view of some general principles of design as regards architectural works; and, having defined these principles, to consider their practical

application in forming an opinion of the merits of architectural works.

As the first and most universal objects in architectural design, may be named, Fitness and Economy; and these, in their true sense, are essential to every work of human contrivance. If not accomplished, they always are, or ought to be, attempted. In these terms many particulars are comprehended, which are essentially local, or apply only to particular cases: thus, the fitness of the plan of an edifice for public worship is compounded of many circumstances quite different from those which constitute the fitness of a place of public amusement; the fitness of a court of justice, in like manner, is different from the fitness of a fortification: but it is a general principle, or *axiom*, applying to all works of art, that they be fitted for the respective purposes for which they are designed. So obvious and so universal a principle as this needs only to be named, to be recognised as an *axiom of design*. Economy, as a principle, claims important consideration in designing architectural works. It implies a judicious adaptation of expenditure to the amount of funds; and the completion of as much work as can be properly effected for the sum devoted to the object in view.

Design, as regards art in savage life, is first manifested in the construction of buildings for shelter. As the mind of the contriver is rude and uncultivated, so is his work, which exhibits only the first rude dawnings of ingenuity. In these works we soon perceive another motive gradually springing up, and forming a great feature and object of design; viz. not only to appease animal wants, but to please the eye.

To fitness, or mere usefulness, beauty is added; and the hut of the savage becomes *ornamented*: the trunk of a tree forms the rude type of a column; the rough beam-end of *use* becomes the *triglyph* of Doric ornament; and the rapid and interesting progress from usefulness to ornament, which Vitruvius has so ably described, has, by the medium of various architectural works, become a matter of general information. The progress of Gothic architecture has, in like manner, been very pleasingly illustrated by Sir James Hall. That fitness and beauty are the earliest principles of design, is a matter of familiar history. From these we find the next step rising to a higher object than merely to please.

To inspire *devotional feeling* was the next important object of architectural design. The temple was fitted for the reception of worshippers, and its walls and pillars were enriched with ornament: but it is impossible to contemplate either heathen temples or Christian churches, without perceiving that an effect was produced which claims so high a place in architectural composition, that it may justly be considered as now forming an essential principle of design. This is expression, by means

of which the useful and ornamental temple became endued with a character resulting from greatness and beauty combined. The mere fitness or convenience as regards size and accommodation, and the mere ornament as regards rendering those details ornamental and pleasing that before were rough and unpleasing to the eye—objects which, in themselves, are quite distinct, became blended with each other, and with another object, which had more exalted pretensions. Those minds which first cultivated expansive views of theology were, doubtless, the first to combine, in architectural structures, such a character of expression as should render them suitable to the devotional purposes for which they were intended. In heathen temples we may, therefore, distinctly recognise the three leading principles of *Fitness, Beauty, and Expression*.

These principles are developed, in the early history of architecture, with such peculiar force, that to adduce instances of their employment is scarcely necessary. That heathen temples were fitted for their respective uses, there can be no doubt, since they were constructed expressly for certain purposes; and, though we are not sufficiently acquainted with the exact details of the services performed in them to be competent judges, there is just reason to believe that *fitness* formed an essential part of the merits of the heathen temples. This opinion is confirmed by other instances in the progress of architecture; such, for instance, as the early Christian churches. In them we perceive that the general plan of the building is expressly founded on the principle of fitness for particular purposes, as will be hereafter noticed. For the credit of human art, we may reasonably conclude that, when the choice between fitness or utility, and beauty, was unfettered, men naturally preferred engrafting utility on beauty, as an essential feature of design; and this is confirmed by all that we know of early architecture. To some it may appear that this is advancing a mere truism, and asserting that of antiquity which is equally true in all ages. To this we may observe, that the object of this paper is directed, not only to consider the *principles of design* as such, but to show, by examples, that these principles, obvious as they appear to be, are not acted upon, at the present time, in the manner in which we have just reason to believe they were acted upon by the ancients in their heathen temples, and by the early Christians in the erection of cathedrals and churches.

In the heathen temples, magnificence and harmony shine with a lustre which has excited the admiration of all ages. Suited to the climate, the deep shadows of the Grecian portico were surmounted by a lofty and magnificent pediment, on which sculptural enrichments displayed the chivalry of the heathen theology;

while, in other instances, sculptured figures, carved on the frieze, indicated the conquests of warriors, and the subjugation of foreign nations. All these imply the immediate and vigorous application of the principles of design to the objects in view; and, if we pursue this view of the subject to the Gothic churches of the early architects, we find the same principles actively enforced. In the early Christian churches, the cross is the prevailing form: here we trace the operation of fitness, not so much in an architectural or mechanical point of view, as in a feeling of religious sentiment. The mind of the early Christian, full of adoration for the symbol of his religion, considered this form most fit for the temples of Christian worship; and thus the forms of nearly all the English cathedrals, and a large portion of parochial churches, are resolvable into a distinct principle of what, in the above sense, was considered fitness as a type of the cross.

In another respect, the ancient Christian churches present a peculiar feature of fitness; viz. in their being admirably adapted for the processions which at that time formed an important feature in the services of the church.

In respect of *Expression*, the early Christian churches, as well as the heathen temples, present admirable examples of design; so much so, that it is scarcely necessary here to comment upon them. No one who has visited any of the best English cathedrals can, for a moment, doubt that the exact *expression of style* has been obtained which answers the desired end. A reflecting and intelligent mind cannot enter the walls of our venerable cathedral churches, without feeling impressed with a deep sense of how much architectural expression can tend to promote solemn and devotional feelings in the mind: the long-drawn aisles, the lofty roofs, the clustered columns, and the richly ornamented windows, are admirable practical expositions of *expression* as a principle of architectural construction.

Let us now apply to modern churches the principles which have thus been briefly indicated as regards fitness, beauty, and expression. For the worship of the ancient heathen, we have seen the proud and majestic temple, fitted for its peculiar use by appropriate ornaments, and rendered expressive by harmony and magnificence. In the ancient Christian churches we find a wide departure from the heathen temple; a different kind of fitness, indicated by a different form; a different kind of beauty, and a different kind of expression: the form varied from a simple parallelogram to a cross; the details of classic architecture, founded on imitation of trunks and beams, varied to an immediate imitation of vegetable forms; and the expression of simple harmony and majesty varied to a totally different combination of forms; as different, indeed, as it is possible to con-

ceive; a difference nearly as wide as that which exists between a horizontal and an upright line, between the broad masses of sandstone rocks and the towering columns of basalt. In these several deviations we distinctly trace the operation of the same principles of fitness, beauty, and expression, but developed in a mode corresponding to the circumstances of the case.

Between the ancient churches of the early Christians and the churches now used by Protestants, nearly, if not quite, as great a difference exists, as regards principles of architecture, as that between the heathen temple and the early Christian church. The superstition which first dictated the form of the cross no longer remains; and, as a matter of superstition, no intelligent architect would deem this form deserving of attention. As regards beauty, the elements of what is commonly called Gothic architecture seem the product of an exceedingly refined taste; which, having derived its forms from vegetable phenomena, has selected the most obvious and most decided source of beauty as regards form: and hence, also, the beauty of expression, as regards architectural buildings, is dependent on the source whence such forms are derived, as well as on the influence of early associations. Beauty of form, and force of expression, are often intimately combined; but, in the consideration of the general principles of design, it will be more conducive to clearness, as well as more conformable to the general features of the subject, to consider beauty as a quality intended to please the eye, from the expression of a character, which, without aiming at mere ornament, satisfies the mind.

We see that, in ancient times, certain fixed principles were applied to the erection of public edifices; and we learn that these erections were made, not from mere imitation, but from the necessity of adapting them to new modes of thinking, and new purposes of utility. The example of striking out a new path is at least worthy of admiration; and it is one object of this paper, to consider how far, also, it is capable and worthy of imitation.

With reference to churches, let us consider what is now the usual practice. The day of cathedrals is gone past; and, as regards these proud memorials of art, these magnificent conceptions of the human mind, we view them with too much reverence to propose to bring them within a formal modern rule. Constructed by masters of the art, they remain powerfully indicative of how much influence mere stone and lime and wood can impress upon the mind. As regards modern parochial churches and chapels, a very different feeling ought to prevail. In the cathedral, we contemplate only a record of the past; in a parish church the present is before us; and the welfare of society is connected with the consideration of a place where large masses

of society weekly receive instruction. The fitness of a parish church has, therefore, immediate reference to this object; and, arising out of this, the following observations occur.

Neither room for Roman Catholic processions, nor a large space for private adoration to images, &c., is now required; yet the generality of churches are built on the same plan as when these objects were essential. An oblong form, and narrow aisles, are adopted, not from principle, but from imitation. A nave and aisles, in a Protestant church, are equivalent to a stage in a theatre where performers no longer act, but where addresses are merely read by some one in the midst of the auditory. This results from imitating precedents, and nursing ancient prejudices, instead of boldly adopting new and appropriate principles of design.

On the general principles of design are based the peculiar exigences of each particular case. The same principle of fitness which applies to the ancient Roman Catholic church applies to the modern Protestant church; but it is, or ought to be, directed to the attainment of very different objects. Beauty, if intended to please, should be also modified by the intended use of the edifice; thus, ornaments which are appropriate to a court of justice may be unsuitable to a theatre; and the expression of style which suits a church would be altogether misplaced in a ball-room.

Having thus briefly commented on the nature of fitness, beauty, and expression, I shall proceed to consider their application as general principles of design.

I have already alluded to the circumstance of ancient temples being fitted for their proposed use, and, in a subsequent period, of the Roman Catholic cathedrals being, also, especially adapted for the processions and ceremonies peculiar to the worship of that church. In these cases, the architect seems first to have studied the nature of the accommodation required, and then the best method of accomplishing the effect which it was desired to produce: in other words, fitness formed the first consideration in the art of design. Subserviently to this, beauty was added, as an enrichment; and the conception of master minds stamped dignity and grandeur on their work, by giving it an expression suited to the solemn purposes for which these structures were destined.

It would be difficult, in the whole range of architectural design, to imagine two objects more different than those proposed to the designer of a Roman Catholic cathedral, and a modern Protestant church: yet the latter is almost invariably designed, *not on any original principle, or consideration of fitness for the desired object, but from imitation of what has been done before.*

That every one should see and hear the preacher, seems one

of the most obvious considerations as regards the fitness of a parish church. This accommodation could not fail to obtain some attention from every contriver of a church who should study its arrangement on any fixed principle; but in how few, even of modern churches, do we find this object effected! From imitation of ancient forms, we generally find churches built in an oblong shape, and divided into aisles. Hence a large portion of the auditory are altogether removed out of the compass of an ordinary voice; and this is so evidently contrary to the real purpose of the place, as to evince an absence of due regard to correct principles of design.

As regards *Fitness*, I consider it to imply *the best possible adaptation of the means placed at the disposal of the designer, to produce whatever is admitted to be desirable and convenient for the intended purpose; and the avoiding of every thing that is objectionable, to the utmost extent compatible with the economy which limits the compass of the design.* Fitness, as comprising these objects, undoubtedly takes precedence of beauty. Expression of style is, also, altogether subservient; and the skill of the architect is best shown, when, having obtained utility, he adds appropriate decoration, and gives the whole a suitable expression. In nearly all old churches, there are many positions in which it is impossible *either to see or hear* the preacher: this results from their never having been intended for such a purpose. But, in a modern church, it does not seem based on any correct principle, that many seats should be fitted up for persons to attend regularly, and hear the liturgy and sermon read from a fixed place, while a massive stone pillar shuts out, by a total eclipse, the whole of the pulpit from the view of the hearer; and, in a like manner, prevents the preacher from seeing a portion of his audience. To the holder of a pew so situated it must be exceedingly annoying; and I have again and again wondered how a defect so obvious could be continued so long. It is one of the anomalies arising from this mode of building, that the seats for the poor are often much better placed than those expressly intended for their wealthy neighbours. The writer, a few years ago, on going to a church in London, to hear the Bishop of Hereford preach, selected one of the best situations, and sat down very comfortably on a seat open to the public, but expressly intended for the poor. The verger kindly offered to show him to a pew, and led the way to a place, not only *behind the preacher*, but with a large pillar intervening. I need scarcely add that the offer was declined, and the former position resumed. A favourable and proper position of the auditory is, in short, so very essential an object in a place of public worship, that the principle of fitness is invaded by any defect in this particular. I have lately seen a modern church, where, on one Sunday, a

stranger might lean over the preacher's shoulder, and read out of his book; and on the next sit on a seat prepared as one of the ordinary sittings in a pew, and be directly *under the very feet of the clergyman*; the floor of the pulpit actually forming a roof to the pew. To see and hear well are essential to the proper objects of a Protestant place of worship; and every church in which the preacher is eclipsed by pillars, or the auditory removed beyond the ordinary limits of distinct hearing, is defective in the principle of fitness; or, in other words, it is devoid of the advantages which it ought to possess, and it inflicts on a portion of the audience an inconvenience which is glaringly inconsistent with the objects of the structure.

But it is not only those who sit behind pillars, or at a vast distance, that have reason to regret the want of a correct principle in planning a church: the position of the seats seems, in most churches, to be guided by mere caprice; or, at best, the only principle observed seems to be that of making them either parallel to, or at right angles with, the walls. With the exception of the organ galleries, and one or two side pews near the pulpit, there is not, in many churches, a seat on which a person can look directly forward to the preacher. By a very simple train of reasoning, it might seem evident that, as the great object of the attendance of so many persons is to hear the discourse, the comfort and accommodation of each and every person, with a view to this, is essential to the *fitness* of the design. So far from this principle being generally observed, we not only have a view of the preacher at every possible angle of obliquity, but are sometimes placed so as look in the very opposite direction.

Now, as a principle of design for a church, I consider it essential that every person should not only see and hear, but should also look directly towards the preacher. This may be effected by a proper arrangement of the pews, as concentric circles; and by having whatever pillars are required for the support of the building placed in, or from the termination of, aisles converging towards the pulpit. The effect of this, as compared with the present mode of building, and an illustration of this, and other principles in the construction of churches, and other public buildings, will be considered in another paper.

ART. II. *On the Article in the London and Westminster Review, entitled, "Barry's Design for the new Houses of Parliament."* By CANDIDUS.

PASSING over the offensive poem to this article, which is not only in singularly bad taste, but, withal, is so utterly irrelevant,

that it may fairly be suspected to be an addition of the editor's own, I shall dismiss from consideration the objections urged against the old site being retained, and the style for the intended structure having been restricted either to Elizabethan or Gothic. These are points for which the author of the accepted design is no more answerable than any of the other competitors; therefore, to dwell so much upon them looks very much like a determination on the part of the writer to excite prejudice against Mr. Barry in particular; his drawings being the only ones referred to, and made responsible, as it were, for circumstances over which he had no control.

As far as that gentleman is concerned, the question is not whether a better site might not have been selected, but whether he has succeeded in the design itself. Let us hear the opinion of W. E. H., for those are the reviewer's initials. It is, then, he assures us, "extremely well adapted for a college of abbots, or a great metropolitan cathedral; but therefore entirely inappropriate for a hall of national representatives." How far it looks like a college of abbots, I pretend not to say, being unacquainted with any example of the sort; but I certainly cannot detect the slightest resemblance to a cathedral. As well might the reviewer have said that it reminded him of Windsor Castle, or that Windsor Castle bears a strong likeness to Westminster Abbey. The style, it is further contended, is strictly ecclesiastical; and, most undeniably, there are many single features and details common to religious edifices: but there are also others incorporated with them; while the general character, masses, proportions, distribution, and composition are altogether different from those which prevail in ecclesiastical examples. If pointed windows are sufficient to stamp the whole as decidedly ecclesiastical, then it was unfortunate that any latitude was allowed; and the architects ought to have been strictly confined to the Elizabethan, or suffered to go no further back than to the earlier Tudor, with its square-headed apertures. However, even the critic himself allows that, if the Houses of Parliament are to be erected in the immediate vicinity of the Abbey, they ought to be in a style that will accord with it. Yet, although as remote in character from that pile as anything at all partaking of the same style can be, Mr. Barry's design is, it seems, too decidedly ecclesiastical.

After reading the above quoted opinion, few will be prepared for the following one, which occurs a page or two after:—"With respect to the design, considered only in reference to the designs of other architects, it may be allowed to be superior to any of those which have been exhibited." It is true, this does by no means contradict the former assertion, and it even shows that the reviewer does not decry Mr. Barry for the purpose of favouring

any one else; but then so much the stronger is the censure, thus implied, of all the other architects; nor is any exception made in favour of Mr. Savage, notwithstanding that long quotations from his pamphlet are introduced, and the opinions advanced in it warmly commended; consequently, the passing by his design altogether amounts to a tacit admission that Mr. Savage either did not act upon the principles he himself has laid down in regard to style, or signally failed in illustrating his doctrine by his own successful application of it. Perhaps we shall not be very wide of the mark in conjecturing that it was the exhibition itself which operated like euphrasy on Mr. Savage's critical vision; and convinced him, that he himself, as well as his brethren, had all adopted very narrow and mistaken views as to architectural style. Nevertheless, his hints (and, as far as they go, they are certainly worth consideration) need not be thrown away, but will, it is to be hoped, be practically applied, with a fortunate result, on some future occasion.

To return from Mr. Savage to W. E. H.—Is the latter serious, when he asserts that a stranger, if set down before Mr. Barry's building and the Abbey, would mistake one for the other? At any rate he is, though perhaps unintentionally, as little complimentary towards the Abbey as towards the accepted design; for it is tantamount to saying that what has hitherto been regarded as one of the noblest specimens of ecclesiastical architecture in the kingdom, has really so little of the character befitting it, that it might easily be mistaken for the Houses of Parliament! Perhaps, after such an opinion (for which he may be left to be tried by a jury of antiquaries), we ought not to be greatly astonished when we find him afterwards, not only terming Westminster Hall "a vast stone barn," but actually suggesting that the Abbey itself might as well have been appropriated to the purposes of the Houses of Parliament, without a needless expenditure of the public money! This is startling enough; particularly when it is considered that, in order to accommodate it to any such use, the whole interior of the building must be gutted, and fitted up quite differently, and numerous committee-rooms and offices provided; unless the reviewer would do away with the latter altogether, and have no more than the two halls of legislature, without adjuncts or *encumbrances* of any sort. It is hardly worth while asking if he considered the other numerous difficulties which would interfere with so notable a scheme; because I do not imagine that he considered more than what appeared to him a capital joke; which being the case, it is rather strange he should have omitted to inform us which of the two houses of legislature he would have placed in the *nave*.

To suppose that W. E. H. was at all in earnest, would be calling his judgment in question altogether; since nothing can

be more chimerical, or prove greater ignorance of the subject on which he has undertaken to enlighten others, than such an absurd and preposterous idea. If, on the other hand, we are to look upon it as a mere pleasantry, it is an exceedingly heavy and clumsy one; and, moreover, of such a kind as to throw a degree of ridicule over the whole matter. What credit for sincerity, even, can a writer obtain, who, while professing to discuss an important question, studiously seizes hold of every occasion to set it in a ridiculous light? Far am I from wishing to interdict the use of pleasantry, and exclude it entirely from criticism and argument: but, then, it is a rather dangerous ally; one that requires to be held in check; for, if once allowed to get the upper hand, it is apt to play most unseemly antics. Just now, this caution is hardly superfluous; for, judging from most of the architectural pamphlets that have lately been put forth, it would seem that the writers labour hard to make up in drollery for lack of argument and criticism; indulging in a strain of grotesque facetiousness, that, although allowable in a professed jester, like Tom Hood, does not say much either for the good taste or the ability of those to whom we look for real information and criticism. In such strain of silly impertinent jesting are Mr. Wilkins's remarks about patent railroads being required in order to reach the upper rooms in Mr. Barry's tower. Indeed, Mr. W's tone throughout argues nothing so much as a determination to conjure up absurdities of his own invention, in order that he may attribute them to Mr. Barry's design; forgetting, or choosing to forget, that, upon a not very late occasion, he was himself assailed after the same fashion by others, and is liable to be so assailed again, more deservedly, too, than before; since he has now sanctioned, by his own employment of it, that buffoon mode of attack, which is sure to excite a laugh among those who, like idle mischievous boys, relish the fun of the dispute, caring very little for the merits of the case, or how it may turn out. Whether ridicule be or be not the test of truth, most assuredly it is a very fallacious test, or even worse than none, in criticism; because, if once we make up our minds to set at nought every other consideration, nothing is easier than to show up in the most ridiculous light the finest works of architecture, and, indeed, of every art. By means of a little cleverness in burlesque, and tact in misrepresentation, a man might make the *Iliad* appear a tissue of nonsensical fables and absurdities, where common sense is every moment shocked; nor would it be a more difficult task to make the Parthenon itself cut a very humiliating figure.

But I am now, besides straying widely from my proper subject, touching upon one that would of itself furnish ample matter for a separate paper. I return, therefore, to W. E. H., the

reviewer; yet merely for the purpose of noticing one or two singular remarks and opinions he has thrown out. "Some critics," he says, "assert that a preference should be given to the style chosen by Mr. Barry, as national; which is tantamount to a declaration (a strange one, certainly), that pointed architecture has never been cultivated with success on any part of the Continent." Before I can admit this, I have to be convinced that, in order to be "national," a style must be exclusively so, and partake of no mode of building employed in any other country. It may be so: but, in such case, where are we to look for a national style, either among ourselves, or any where else? It would also seem to follow, that pointed architecture is not a *genus* comprising many styles and their varieties, but a single uncompounded style, exhibiting itself the same, not only in the same country, but in different ones.

He afterwards contends that the term "pure Gothic" is "pure nonsense;" it being applied, not to the earlier stages of pointed architecture, where it exhibits itself in its primitive forms, but to that where it had attained its maturity, and completely developed itself in all its parts. Allowing that the term is not exactly logical, to object to it now, that it is established and understood, is mere captious cavilling, akin to that species of minute and trifling criticism, which would explode the term Gothic itself as an erroneous one. Supposing that a better and perfectly unexceptionable term could be coined and brought into vogue, what would be gained beyond the mere change of a word? In all other respects, we should continue exactly where we are at present; our knowledge not in the slightest degree extended, nor our ability at all advanced. Terms originate arbitrarily and casually in architecture, as well as in other arts, and in all the affairs of life; and it might be shown that many have obtained meanings altogether different from those they had when first introduced. Most absurd, then, is it to object, as some have done, to the term "Gothic architecture," as implying reproach; when, in reality, it does no such thing, being neither so intended, nor so understood.

Let us, however, turn to something more important than squabbling about words, and see what opinion the reviewer entertains of the Gothic style itself; which the following passage will show that he looks upon with no common eyes. The beautiful effect of groined roofs, he observes, "is owing, not to the arches being pointed, but to the elliptical lines, of which the pointed arches are merely the intersections. The eye is pleased, because it does not dwell upon the point where the intersection takes place, but follows out and loses itself among the curved lines beyond. This theory explains the reason why the external appearance of a pointed window, where the elliptical

lines of which it is formed cannot be traced beyond the point of intersection is stiff and formal; and such windows are in general scarcely, if any thing, better than *triangular holes in a wall*!!

This last is so novel, not to say unwarrantable, an opinion, that, were it possible, one would almost suspect the reviewer derived his notions of Gothic windows from such examples as Strawberry Hill, and other *soi-disant* Gothicisms and Gothicisings, where the windows are mere openings, without mouldings or finish of any kind; whereas, besides the decoration belonging to them as apertures, Gothic windows are, with some few exceptions, and those early ones, remarkable, beyond those employed in any other style, for exhibiting the principles and characteristics of the style to which they belong. Each separate window forms a system of apertures, mostly arched; and the tracery which fills the arch head above presents almost every possible combination of curved lines, combining intricacy with regularity and harmony. Herein the preeminence and variety of Gothic windows are indisputable: nor do I imagine that any one, save the reviewer, will be hardy enough to deny it.

He has, perhaps, a licence for seeing either less or more than other people; for he goes on to say, "Hence the unredeemed ugliness of the three principal compartments of Mr. Barry's river front, in which there are no less (fewer) than sixty openings of this description:" meaning, I presume, mere naked holes in the wall. But hence, too, it would seem to follow, that the defect complained of, and the "unredeemed ugliness," are to be attributed, not so much to want of talent in the architect, as to the style itself: for the design is not censured for poverty of style; and, as we have seen, it is admitted to be superior to any of the others: so that even Mr. Barry's rivals will hardly relish the charge of "unredeemed ugliness," here brought against him; because his acknowledged superiority only thrusts themselves down several degrees lower.

"Even in Grecian architecture," continues the critic, "it may be remarked, that pediments, or pointed roofs, form the least pleasing features of the style; while the ornaments of a Corinthian capital" (an order, by the by, hardly known to pure Grecian architecture) "are superior to any other, from the more graceful combination of curved lines." Many will, perhaps, be of opinion, that gracefully curved lines exhibit themselves still more decidedly in the volutes and spirals of the Ionic capital. However, we will let that pass, my chief object in quoting the above passage being to call attention to what is said respecting the Greek pediment; which, so far from being regarded as a feature at all beautiful in itself, or as of value in the composition, by throwing in contrast and variety, breaking the monotony of horizontal lines, and distinctly marking the centre,

is considered by this critic almost in the light of a defect. It may be presumed, therefore, that, where not dictated by necessity, he would rather suppress the pediment of a portico, as detracting from consistency and harmony. Yet, if the taste of the Greeks themselves be of any authority, such form may very well be supposed to have some intrinsic beauty to recommend it; because we find it to have been employed by them, from choice, both in sarcophagi and in merely ornamental features.

I shall not pursue W. E. H. any further, except to remark that, when he asks, "Are the forms of the forest exhausted in the five orders of Grecian columns?" he expresses himself not a little fantastically, and, withal, more inaccurately than is becoming in one who, as we have seen, affects such scrupulous precision in the use of terms. None but an absolute tyro in the art would now talk of the *five* orders of Grecian columns; there being, at the most, but three; while one of them is of such rare occurrence as to be little more than barely admissible on the list. Most assuredly, he is quite correct in supposing that the "forms of the forest" have not been exhausted in those of the ancient orders; and for this reason, that in no respect have they served as prototypes for them, or can do so, although the shaft of a column may be likened to the stem of a tree. The "forms of the forest" would produce a style altogether different from that of Grecian architecture, and, in fact, from every other. All that the writer means, I presume, is, that numerous other vegetable forms, and dispositions of them, might be employed for foliated capitals, besides those adopted for the Corinthian capital; an opinion I by no means dispute: I only censure the affected, and almost nonsensical, obscurity in which it is wrapped up, as if the writer was afraid of announcing it in a less ambiguous mode.

If it were W. E. H.'s object to start fresh difficulties and perplexities in regard to the new Houses of Parliament, he has succeeded. He may, or may not, annoy Mr. Barry by his remarks; but he will offend many persons besides, antiquaries especially; nor will he much gratify any of the other exhibiting architects: yet hardly will they consider him a very formidable censor, or care much for his opinions; for his criticism consists of little more than a knack of quarrelling with every thing, sometimes almost with himself, so little do some of his remarks agree with each other. In architecture he is more original than profound; and he may, without much injustice, be set down as belonging to that class of critics whom Mr. Wilkins would style "*heaven-enlightened.*"

London, June 25, 1836.

ART. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq.
 Essay IV. 1. *Experiments with Arches placed on Piers, having Weights and Structures upon them.* 2. *Experiments with Piers that will just balance under the Lateral Force and Weight of different Arches.* 3. *Experiments with Arches of varied Span and Form, acting against each other, being placed on Piers of unequal and equal Heights.*

(Continued from p. 360.)

THE three following diagrams (*figs. 144, 145, and 146.*) represent experiments with a semicircular arch, and two of its segments, placed on piers of equal bases, to ascertain their respective lateral forces, by the difference of height of the piers on which they respectively will balance.

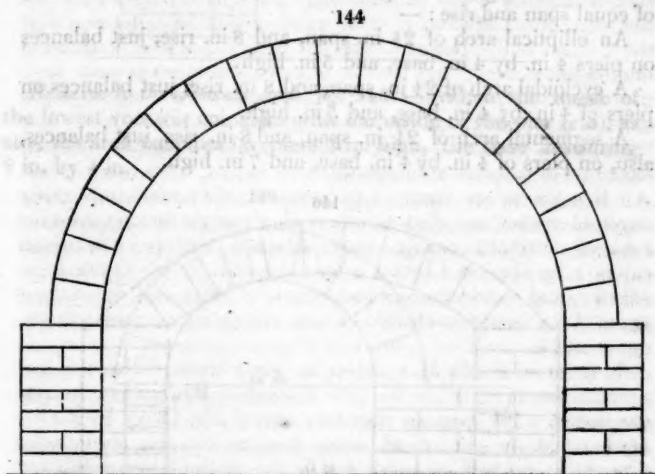
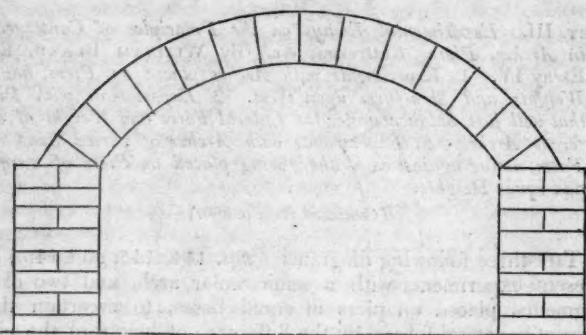


Fig. 144. represents an arch of 24 in. span, and 19 in. high, and composed of twenty voussoirs, each of the weight of half a pound, which just balanced on piers of 7 in. in height; the base measuring 4 in. by 4 in. The weight of the arch is 10 lb. The height, from the base line to the under part of the keystone, is 19 in.

The arch *fig. 145.* just balances on piers 8 in. high. The weight of the arch is 6 lb.

The arch *fig. 146.* just balances on piers 7 in. high; and its weight is $4\frac{1}{2}$ lb.

145



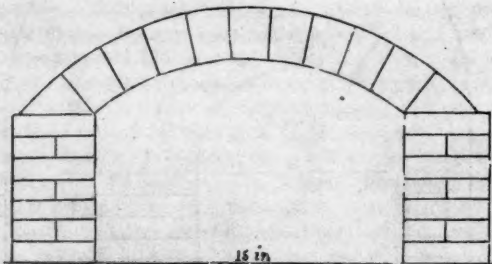
The following are comparisons between the different arches of equal span and rise : —

An elliptical arch of 24 in. span, and 8 in. rise, just balances on piers 4 in. by 4 in. base, and 5 in. high.

A cycloidal arch of 24 in. span, and 8 in. rise, just balances on piers of 4 in. by 4 in. base, and 5 in. high.

A segmental arch of 24 in. span, and 8 in. rise, just balances, also, on piers of 4 in. by 4 in. base, and 7 in. high.

146

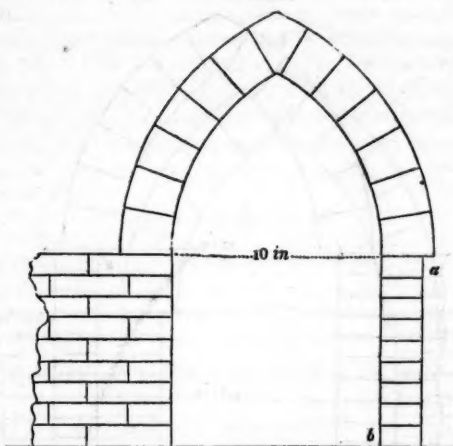


This last experiment with the segment of a circle correctly confirms what was observed of that form of arch when treating of the extrados of the ellipse and cycloid, as given in Essay I.

The Gothic and Roman arches of equal spans, being placed on piers of the same dimensions of base, balance as under : —

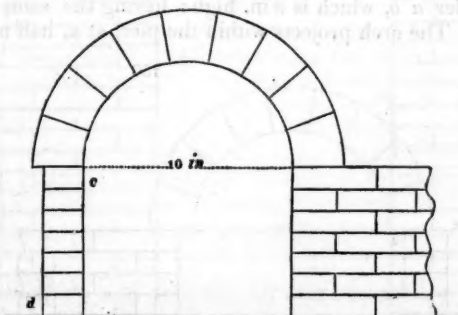
Relative to the Gothic Arch fig. 147. — When the inside of the lowest voussoir coincides with the inside of the pier *a b*, as at *a*, this arch balances on piers 9 in. high ; the base measuring 2 in. by 4 in.

147



Relative to the Roman Arch fig. 148. — When the inside of the lowest voussoir coincides with the inside of the pier (*c d*), as at *c*, the arch balances on piers 7 in. high, the base measuring 2 in. by 4 in.

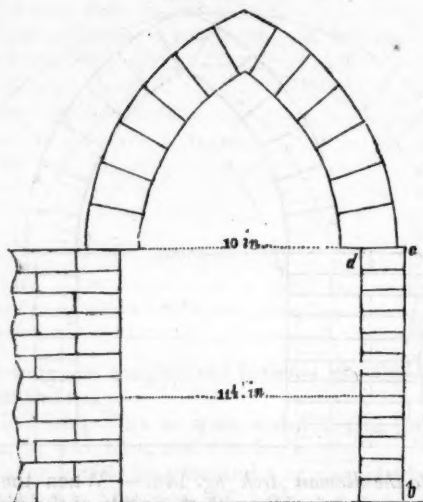
148



Again, the same two arches, being placed with the intrados of their lowest voussoirs at a certain distance within the line of the piers, balance as follows : —

Relative to the Gothic Arch fig. 149. — This arch balances on the pier *a b*, which is 12 in. high, having 2 in. by 4 in. for the base. The arch projects within the pier, at *a*, three quarters of an inch, or it would not balance. When the pier is reduced to 9 in. in height, the arch will carry half a pound; and, when

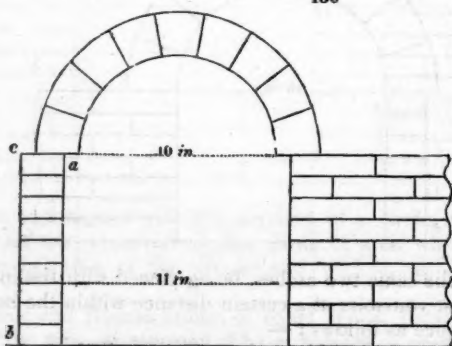
149



reduced to 6 in. in height, it will carry 3 lb. well, or twice the weight of the pier of six bricks.

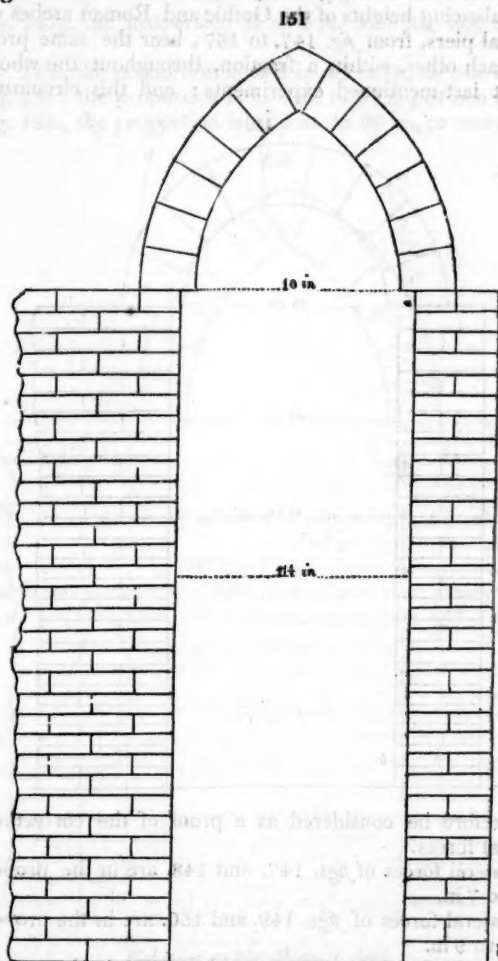
Relative to the Roman Arch fig. 150.— This arch balances on the pier *a b*, which is 9 in. high; having the same base as fig. 149. The arch projects within the pier, at *a*, half an inch.

150



When the dimensions of the bases of these pillars supporting the Gothic and Roman arches are increased to 4 in. by 4 in., these arches will then balance at the height shown by figs. 151. and 152.

The Gothic arch *fig. 151.* balances on the pier *a b*, of 32 in. in height.



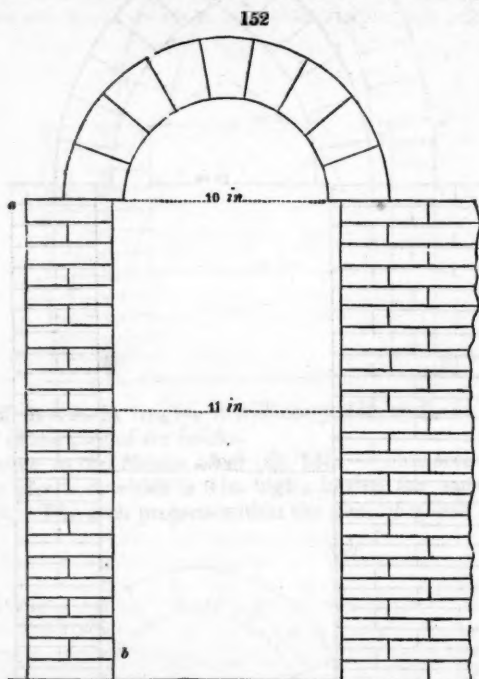
The Roman arch *fig. 152.* balances on the pier *a b*, of 23 in. in height.

On increasing the dimensions of the piers of these two arches, by making their bases 6 in. by 6 in., and placing them upon the same, the balancing heights were found to be, —

For the Gothic arch *fig. 153.*, 96 in.

For the Roman arch *fig. 154.*, 72 in.

The balancing heights of the Gothic and Roman arches upon the several piers, from *fig. 147.* to 157., bear the same proportion to each other, within a fraction, throughout the whole of the eight last-mentioned experiments; and this circumstance



may therefore be considered as a proof of the correctness of the lateral forces.

The lateral forces of *figs. 147.* and 148. are in the proportion of 9 in. to 7 in.

The lateral forces of *figs. 149.* and 150. are in the proportion of 12 in. to 9 in.

The lateral forces of *figs. 151.* and 152. are in the proportion of 32 in. to 28 in.

The lateral forces of *figs. 153.* and 154. are in the proportion of 96 in. to 72 in.

Again, with regard to the pillars, or piers, to the balancing heights: —

Relative to the Gothic Arch.

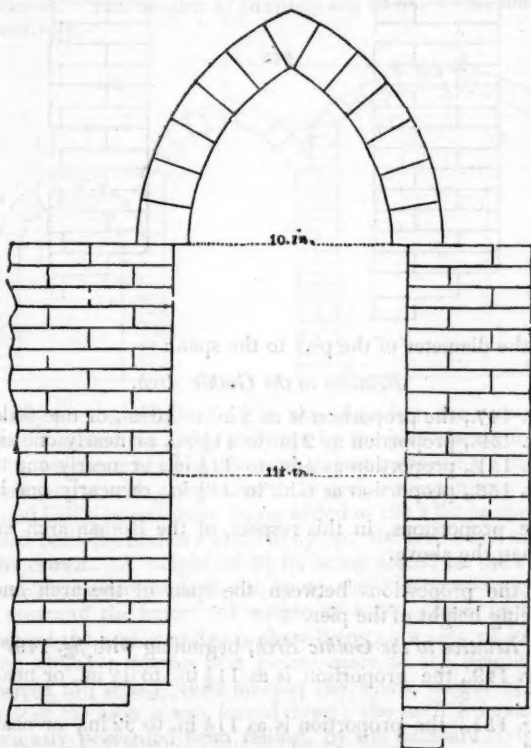
Fig. 147., the proportion is as 2 in. to 9 in., not quite one fifth.

Fig. 149., the proportion is as 2 in. to 12 in., or one sixth.

Fig. 151., the proportion is as 4 in. to 32 in., or one eighth.

Fig. 153., the proportion is as 6 in. to 96 in., or one sixteenth

153



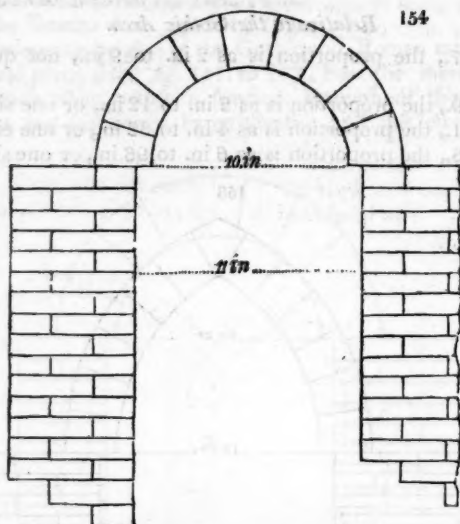
Relative to the Roman Arch.

Fig. 148., the proportion is as 2 in. to 7 in., not quite one quarter.

Fig. 150., the proportion is as 2 in. to 9 in., or nearly one fifth.

Fig. 152., the proportion is as 4 in. to 23 in., or nearly one sixth.

Fig. 154., the proportion is as 6 in. to 72 in., or one twelfth.



Of the diameter of the pier to the span : —

Relative to the Gothic Arch.

Fig. 147., the proportion is as 2 in. to 10 in., or one fifth.

Fig. 149., proportion as 2 in. to $11\frac{1}{2}$ in., or nearly one sixth.

Fig. 151., proportion as 4 in. to $11\frac{1}{2}$ in., or nearly one third.

Fig. 153., proportion as 6 in. to $11\frac{1}{2}$ in., or nearly one half.

The proportions, in this respect, of the Roman arch are all less than the above.

Of the proportions between the span of the arch and the balancing height of the pier.

Relative to the Gothic Arch, beginning with fig. 149.

Fig. 149., the proportion is as $11\frac{1}{2}$ in. to 12 in., or nearly as 1 to 1.

Fig. 151., the proportion is as $11\frac{1}{2}$ in. to 32 in., or nearly as 1 to 3.

Fig. 153., the proportion is as $11\frac{1}{2}$ in. to 96 in., or nearly as 1 to 8.

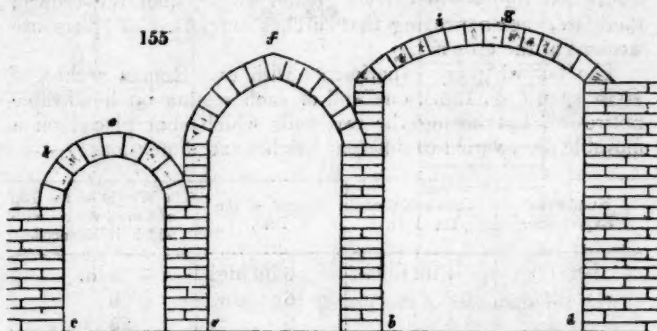
The proportions of the Roman arch, as to span, and height of pillar, are not so regular as the Gothic.

The superiority of the Gothic over the Roman arch, in regard to the greater lightness of pillar, sufficiently accounts for the general preference given by our forefathers to the pointed form ;

and, at the same time, justifies their adoption of it in the construction of our most celebrated cathedrals.

The following are experiments with arches of unequal span, and of dissimilar forms, placed on piers of different heights, and supported between two immovable buttresses:—

The spans of the arches *e*, *f*, and *g* (*fig. 155.*) are 10 in., 13 in., and 19½ in. respectively. The bases of the two movable piers measure each 4 in. by 4 in.: *c* and *d* are the immovable piers, or buttresses. The heights of the piers are 12 in., 18 in., and 24 in. respectively.



Now, when a weight of 1½ lb. was placed on the crown of the arch *g*, it caused the arch *f* to fly up, by the pier *b* being forced in. A 1 lb. weight, placed on the arch *f*, just balanced a 2 lb. weight placed on the arch *g*, but caused the arch *e* to open very much at *h*; and half a pound more being added to the 2 lb. on the arch *g*, caused both the arches *e* and *f* to fly up: the arch *e* had no weight on its crown. A weight of 9½ lb. being placed on the crown of the arch *e*, caused the arch *f* to fly up, there being no weight upon the crown of the latter. A weight of 4½ lb., placed on the arch *f*, caused the arch *e* to fly up, there being no weight on its crown. Upon adding a quarter of a pound more to the weight on the crown of the arch *f*, thus making the whole weight 4¾ lb., the pier *b* of the arch *g* was forced down; the arch *e* having been previously prevented from falling, by the pressure of the hand on its crown.

Again, when these three arches (*e*, *f*, and *g*) were placed upon piers all of the same height, of 18 in., with the same base, of 4 in. by 5 in., as in the preceding experiments, but the span of the arch *f* altered from 13 in. to 15 in., and having a rise of 5 in., the same as the other two arches, the results were as follows:—

A weight of 1½ lb., placed on the crown of the arch *g*, caused the arch *e* to fly up. A weight of 1½ lb., placed on the crown

of the arch *f*, also caused the arch *e* to fly up; and, when a weight of 10 lb. was placed on the crown of the arch *e*, it caused the arch *g* to fly up. During these three experiments, there were no other weights on the crown of the arches besides those used to make the trials, and placed as above stated.

The conclusions to be drawn from all the experiments with the three arches (*e*, *f*, and *g*, *fig. 155.*) and their piers are, that, where there is equal and similar pressure, there should be equal and similar arches and piers to meet it.

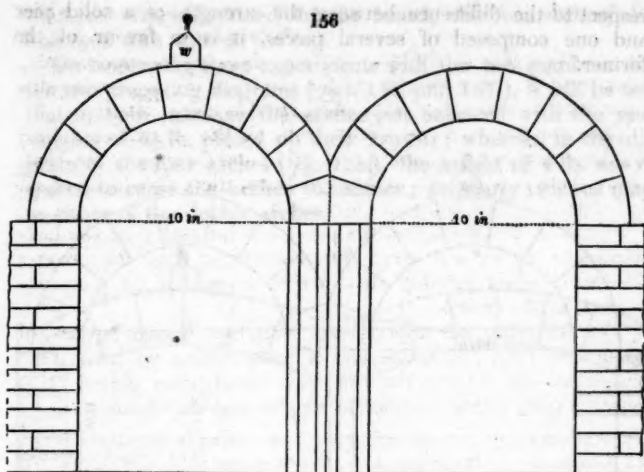
It may be observed, that the point *i* in the arch *g* of the last-mentioned figure will carry a greater weight than the crown; therefore, again proving that arches supported on piers are weakest at the crown.

The following are experiments with two Roman arches, of 10 in. span (*fig. 156.*), one end of each resting on immovable buttresses, but having the two ends which abut placed on a movable pier, varied to different heights and dimensions:—

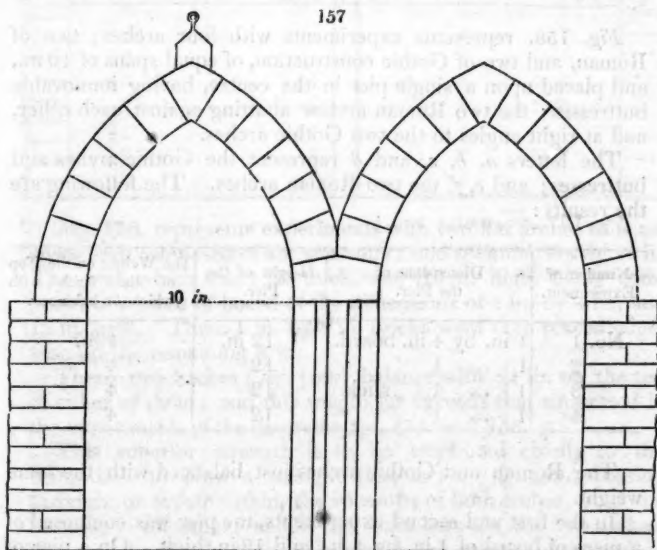
| Number of Experiment. | Dimensions of the Pier. | Height of the Pier. | The Weight on the Top of the Arch with which it balanced. |
|-----------------------|-------------------------|---------------------|---|
| No. 1 | 1 in. thick. | 6 in. high. | 3 lb. |
| 2 | 2 | 6 | 8 |
| 3 | 4 | 6 | 28 |
| 4 | 1 | 12 | 2½ |
| 5 | 2 | 12 | 4½ |
| 6 | 4 | 12 | 8 |
| 7 | 1 | 18 | 1½ |
| 8 | 2 | 18 | 3½ |
| 9 | 4 | 18 | 6½ |

Fig. 157. represents two Gothic arches, of 10 in. span, placed the same as the preceding two Roman arches; and the following are the results of the experiments:—

| Number of Experiment. | Dimensions of the Pier. | Height of the Pier. | The Weight on the Top of the Arch with which it balanced. |
|-----------------------|-------------------------|---------------------|---|
| No. 1 | 1 in. by 4 in. | 6 in. | 4½ lb. |
| 2 | 2 ... 4 | 6 | 14 |
| 3 | 4 ... 4 | 6 | 28 almost as nothing. |
| 4 | 1 ... 4 | 12 | 2½ |
| 5 | 2 ... 4 | 12 | 6 |
| 6 | 4 ... 4 | 12 | 14 |
| 7 | 1 ... 4 | 18 | 2 |
| 8 | 2 ... 4 | 18 | 4 |
| 9 | 4 ... 4 | 18 | 8 |



The piers, for the first, fourth, and seventh experiments in the last two diagrams, were made with solid pieces of board, 1 in.



thick, 4 in. broad, and of the heights of 6 in., 12 in., and 18 in., respectively: bricks were employed for the other piers. With

respect to the difference between the strength of a solid pier and one composed of several pieces, it is in favour of the former.

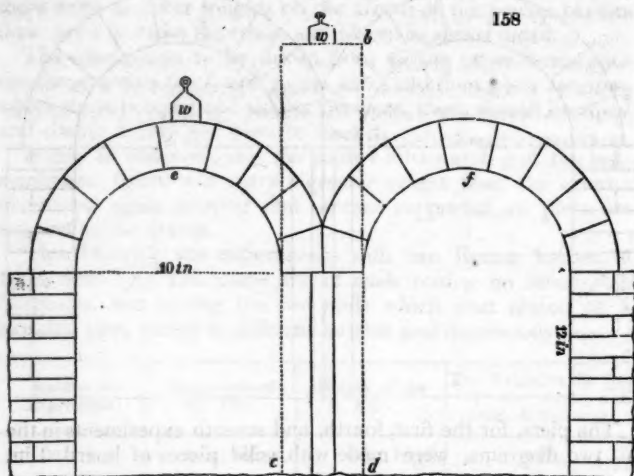


Fig. 158. represents experiments with four arches; two of Roman, and two of Gothic construction, of equal spans of 10 in., and placed upon a single pier in the centre, having immovable buttresses; the two Roman arches abutting against each other, and at right angles to the two Gothic arches.

The letters *a*, *b*, *c*, and *d* represent the Gothic arches and buttresses; and *e*, *f*, the two Roman arches. The following are the results: —

| Number of Experiment. | Dimensions of the Pier. | Height of the Pier. | The Weight on the Top of the Arch with which it balanced. |
|-----------------------|-------------------------|---------------------|---|
| No. 1 | 1 in. by 4 in. board. | 12 in. | 4 lb. |
| 2 | 1 ... 4 | 12 | 4 |
| 3 | 1 ... 1 stick. | 12 | 4 |
| 4 | 1 ... 1 | 12 | 4 |

The Roman and Gothic arches just balanced with the same weight.

In the first and second experiments, the pier was composed of a piece of board of 1 in. by 4 in., and 12 in. high. On a pier of these dimensions, both the Roman and Gothic arches balanced with the same weight; and, when a round stick of 1 in. in

diameter was substituted for the board, the four arches, also, balanced with 4 lb. on the top.

On comparing these experiments with the two numbers 4 of the two preceding diagrams (*figs.* 156. and 157.), it will be seen that in both instances the arches just balanced with the same weights of 2½ lb. placed on their crowns; whereas, in the diagram of the four arches (*fig.* 158.), the weight of 4 lb. was required to cause the arches to balance; or nearly twice as much as either of the double arches.

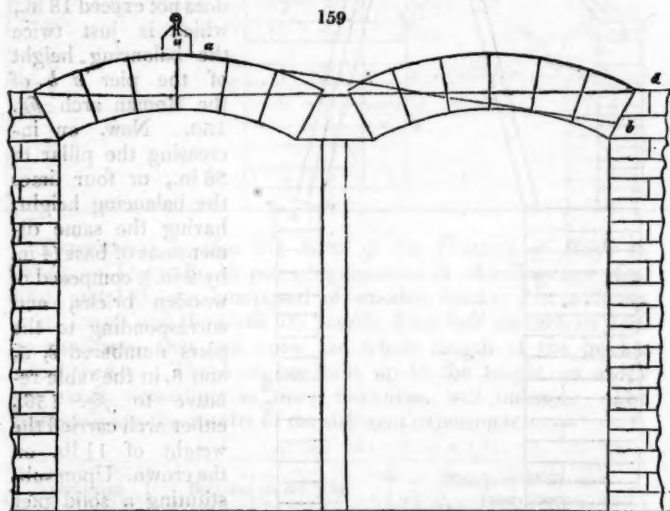
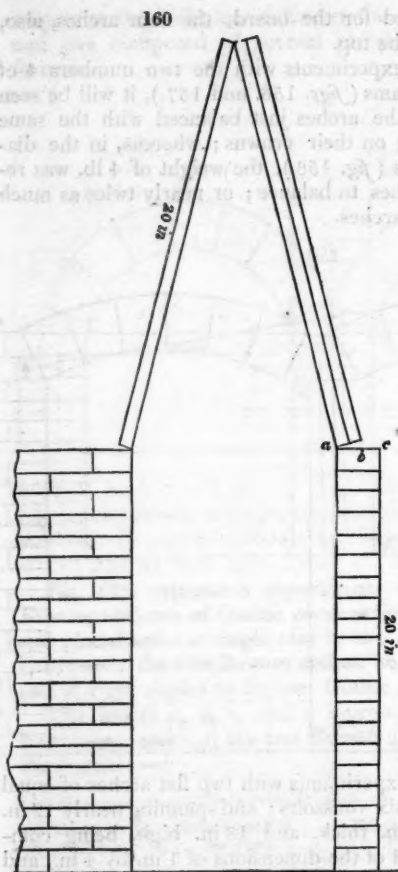


Fig. 159. represents experiments with two flat arches of equal span, each composed of six voussoirs; and spanning nearly 12 in. The pier, which was 1 in. thick, and 18 in. high, being composed of a piece of board of the dimensions of 1 in. by 4 in., and 12 in. high. Three 1 in. by 2 in. bricks were then placed edge-wise up the remaining 6 in.

These two arches (*fig.* 159.) balance with 21 lb. on the top of either of them; and this weight far exceeds that supported in the experiments of the diagrams *figs.* 155. and 156. *g.*

This superior strength is to be attributed chiefly to the being able to draw a straight line, as *c d* (*fig.* 159.), passing through, or rather within, the voussoirs of both arches, from one buttress to the other; and, if the space between the two arches, just over the pier, be built up level with the crowns of the arches, and made all solid, a straight line might then be drawn from *a* to *b*, which would be within the voussoirs and masonry. Let it,

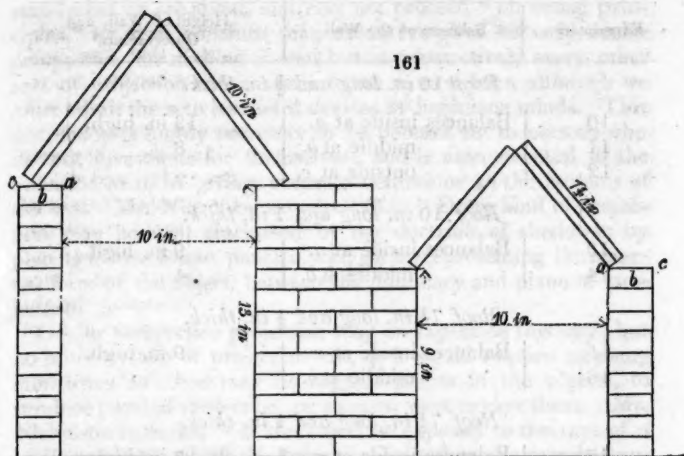


however, be remembered that the buttress must be immovable, or the arches will support very little.

In the diagrams *figs. 156. and 157.*, the greatest height of the piers, or pillars, does not exceed 18 in., which is just twice the balancing height of the pier *a b* of the Roman arch *fig. 150.* Now, on increasing the pillar to 36 in., or four times the balancing height, having the same dimensions of base (4 in. by 2 in.), composed of wooden bricks, and corresponding to the piers numbered 2, 5, and 8, in the table relative to *fig. 156.*, either arch carried the weight of $1\frac{1}{2}$ lb. on the crown. Upon substituting a solid pier instead of the brick one, either arch carried nearly $2\frac{1}{2}$ lb. It has been before observed, that eight of these wooden bricks weigh

1 lb.; therefore the pier in the diagram *fig. 150.* equals rather more than $1\frac{1}{2}$ lb.: consequently, when the pier is carried up four times the height, and is, therefore, four times the weight, the Roman arches, resting upon this movable pillar, and abutting each other, support the weight of nine bricks, or a fourth part of the pier of 36 in. in height.

The Gothic arches, when placed under such circumstances as the above, but with the pillar 48 in. high, carry the balancing pier of diagram *fig. 149.*, which is composed of twelve bricks; and with a solid pier they carry the weight of twenty-four bricks, or half of the whole pier.



Experiments to show the Laws of the Pressure of Roofs on Walls. — The walls, or piers, represented in the diagrams *figs.* 160. and 161. are composed of wooden bricks, 2 in. wide by 4 in. long; and the roofs are boards, from half an inch to 2 in. in thickness, that rest upon the whole length of the bricks, which is 4 in. The walls are built up to the height on which the roofs, according to their thickness, will balance. The following are the results of the different experiments : —

| Experiments. | Balances on the Wall. | Height of Wall, and Observations. |
|---|-------------------------------|-----------------------------------|
| <i>Roof 20 in. long and $\frac{1}{2}$ in. thick.</i> | | |
| No. 1 | Balances inside at <i>a</i> . | 20 in. high. |
| 2 | middle at <i>b</i> . | 11 |
| 3 | outside at <i>c</i> . | 2 |
| <i>Roof 20 in. long and 1 in. thick.</i> | | |
| 4 | Balances inside at <i>a</i> . | 20 in. high. |
| 5 | middle at <i>b</i> . | 10 |
| 6 | outside at <i>c</i> . | 2 |
| <i>Roof 20 in. long and 2 in. thick.</i> | | |
| 7 | Balances inside at <i>a</i> . | Forced the wall inwards. |
| 8 | middle at <i>b</i> . | 10 in. high. |
| 9 | outside at <i>c</i> . | 1 |

| Experiments. | Balances on the Wall. | Height of Wall, and Observations. |
|---|-------------------------------|-----------------------------------|
| <i>Roof 10 in. long and $\frac{1}{2}$ in. thick.</i> | | |
| 10 | Balances inside at <i>a</i> . | 13 in. high. |
| 11 | middle at <i>b</i> . | 8 |
| 12 | outside at <i>c</i> . | ... |
| <i>Roof 10 in. long and 1 in. thick.</i> | | |
| 13 | Balances inside at <i>a</i> . | 9 in. high. |
| 14 | middle at <i>b</i> . | 4 |
| <i>Roof 7 $\frac{1}{2}$ in. long and $\frac{1}{2}$ in. thick.</i> | | |
| 15 | Balances inside at <i>a</i> . | 9 in. high. |
| 16 | middle at <i>b</i> . | 4 |
| <i>Roof 7 $\frac{1}{2}$ in. long and 1 in. thick.</i> | | |
| 17 | Balances inside at <i>a</i> . | 7 in. high. |
| 18 | middle at <i>b</i> . | 3 |

From the above experiments it appears, that the weight of a roof is of less consequence than the place of its bearing, and its pitch, or angle of elevation.

ART. IV. *Perspective investigated.* By ARTHUR PARSEY, Esq., Author of "Perspective Rectified," "The Art of Miniature-Painting," &c.

HAVING laid before the public my conception of what constitutes the, and the only, principles of perspective (for fresh authors cannot invent new principles for nature), I have been enquiring into the origin of the opinions of those luminaries of the art, who have hitherto directed the judgment of society on this subject.

In Vol. II. No. 21., and some previous Numbers, I observe a controversy between J. R. and Mr. Sopwith; the latter gentleman being supported in his opinions by no less an individual than Mr. Peter Nicholson, who has favoured the public with an article on Projection, "To make the subject clear to the understanding of the reader, and to prevent the dissemination of *wrong* principles." As the points in dispute materially affect the principles which I have published, I am induced to offer some observations on them; being myself perfectly indifferent to the individuals who advocate the adverse theories, and only interested in arriving at just conclusions. That we may rightly under-

stand what we are about, and may not proceed "on wrong principles," we must conclude that, as nature gives us only ocular perspective (for nothing is seen but in perspective), every other sort of projection can conform to no natural laws, although we must admit them to be useful devices of ingenious minds. This distinction is highly necessary to be pointed out to persons who do not investigate for themselves; and is even essential to the scientific man, in giving accurate definitions to the systems of the art. Mr. Nicholson says (p. 478.), "Every kind of projection may be well elucidated by the doctrine of shadows; by placing a wire frame, paneled with glass, representing the external form of the object, between the luminary and plane of projection."

Ocular perspective projection may be explained this way; but no other system of projection can, as it would require as many luminaries as there may be angular points in the objects, to produce parallel projection, or as many eyes to view them. Mr. Nicholson remarks, "If the object be exposed to the rays of a luminous point, which the flame of a lighted candle may be supposed to be, we may have every possible linear perspective projection of the object, more or less agreeable, accordingly as the luminous point is more or less remote, or as the plane of projection is perpendicular or inclined to the middle ray. In like manner, if the paneled frame be exposed to the solar rays, from the distance of the luminary, they may be considered as parallel: we shall then have every possible kind of projection made by a system of parallel rays, more or less agreeable, as the plane of projection is perpendicular, or inclined to the rays."

In the first place, it seems wrong in principle to say that the rays from the flame of a candle are projected on a different principle to those from the solar point. In the latter case, the vertical altitude of the rays is greater than those from the flame; each, however, diverging geometrically, according to the distance of the luminaries: it is plain, then, that we do not obtain parallel and isometrical projection by this evidence. In truth, the perspective plane of projection of an object, and the plane of shadows, are never the same. The perspective planes of objects are always between the objects and the eye, touching the nearest point; while the receiving plane of a projected shadow is always beyond the object, and may be there on any plane. Again, objects project shadows *from* a point; in perspective, objects project their appearances *to* a point, in the eye: hence, the usual mode of describing the planes of projection, and confusing the ideas of vision with ingenious contrivances, are far from making the art "clear to the understanding." In fact, all systems of projection, besides ocular perspective, should be taught mathematically; while true perspective ought to be dis-

tinctly treated by its optical principles, founded on the physiology of vision : which subject I propose explaining in a future article. Continuing the popular mode of explanation, Mr. Nicholson says, " Many of the projections of straight lines will be greater than their original (!); Anamorphoses belong to this species of projection ; and we cannot say, *in any case*, however monstrous or distorted, that the perspective is false, if the picture is drawn by the proper rules ; for, if such a picture be viewed opposite to the foot of the perpendicular from the eye, at a distance equal to the perpendicular of the pyramid, the image will be perfectly natural." Draw St. Paul's cathedral, as here described, and draw it by the " proper rules ;" publicly exhibit it ; and how many of the multitude of common sense will pronounce the " monstrous and distorted " projection to be " perfectly natural ?"

There can be but *one* true perspective representation of an object from a given point of view : neither can any of the lines be greater than the originals, as J. R. has justly said, notwithstanding the encomium passed by Mr. Nicholson on Mr. Bradley, as an author who is " too transcendently acquainted with the principles of mathematics to commit a falsehood." Mr. Nicholson adds, " Those, however, who maintain that a projection is false because some of the lines are greater than their originals, maintain a falsehood, as has been made evident." Let me ask any transcendental mathematician whether all the parts are greater than the whole, and whether that popular axiom is a falsehood ? Can a man of six feet high be put in a position to appear more than that length ? His shadow from the setting sun may be greater than the originating object, much greater ; but would any one offer a delineation of his shadow as his representation ? The practical utility of isometrical and parallel projection, if limited to rational rules, no one will question ; but it is absurd to attempt to establish them on the principles of perspective : and it is extremely prejudicial to one of the finest sources of general knowledge, to mystify the simple and instructive theory of perfect perspective, by mixing it up with irrelevant methods.

The article in Vol. II. p. 211., on perspective, by J. R., as far as it applies to the principles of the art, is beyond controversy. He says, can " three sides of a right-angled prism, orthographically represented, be seen in the projection, if one side is represented as a true square, or as a right-angled parallelogram ?" Mr. Sopwith argues, that " Parallel projection exhibits one face of a cube geometrically ; and this face may either be shown alone, as in common ground plans and elevations ; or with one or two of the adjoining faces, as may best suit the object of the designer." This latter opinion, like that

of Mr. Nicholson, makes projection any thing; and any "monstrous or distorted" delineation equally as proper as those produced by the "proper rules" founded on principle.

J. R.'s questions are fraught with importance; while Mr. Sopwith's reply, and Mr. P. Nicholson's powerful denunciation, demand a public refutation; for in them the public are told that their opinions are supported by the Society for the Diffusion of Useful Knowledge, the learned Dr. Brook Taylor, Bishop Horsley, Professor Farish (?), &c.

To proceed purely mathematically in this investigation. The first author of the definitions of geometry, exercising the faculties of sense and reason, must have derived them from the forms of nature, as they appear to the mind's eye, and not from the abstract idea of form only. The forms of nature external to our minds are the only sources of ideas. Thus, a square, offered to the eye as a centre, gives the idea of a superficies forming the base of a pyramid; the vertex of which is in the eye, and the four triangular sides are rays that connect the mind with the object. These associations generated in the enquiring mind problems, theorems, axioms, &c.; all which are stripped of their rationality when they are taken only in the abstract, unassociated with natural phenomena, which is contrary to the spirit of mathematics. The line of an object may form with the eye an equilateral, an isosceles, an oblique, an obtuse, or a right-angled triangle, for mathematical reasoning; but a form that, in the abstract, is one of these shapes, is only positively so; and that beautiful train of reasoning, which is the ultimate object of the student of geometry, trigonometry, and mathematics, is not to discover the angles and proportions of mere lines, but those mathematical creations in the mind which the moving phenomena of nature make it necessary for us, as rational beings, to comprehend. If mathematics be taken only in the abstract, this utility would be serviceable solely to the mechanic, to enable him to shape materials. But to return to the question of J. R.

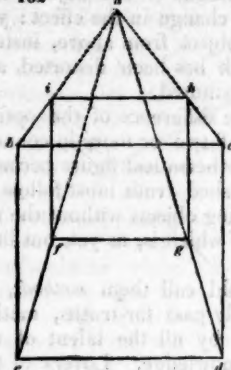
If the eye be placed opposite to the centre of a square, it is seen as a square having four right angles; if the eye be moved in any direction out of that point, more or less, *it cannot be seen as a square*; and the rays, instead of forming the four equal pyramidal triangles, will produce one or two isosceles, with two or three obtuse-angled triangles, or all four obtuse-angled triangles, according to the place of the vertex or eye: in the abstract, the base of all of them, or the projecting plane will be a square, although the pyramidal forms continually change. Will any truly mathematical mind say that the square is not seen to follow the *changes* of the pyramidal rays; or that, on any points the eye may be conceived to rest as vertices, each pyramidal base has more than one optical base, to which mathemati-

cal sections will be like and in proportion, the same as such sections are to the square, when the eye is the vertex of a pyramid? Now, with respect to the cube, as soon as the vertical point of view passes the plane of one side, and a second side enters the sight, the decrease of the side first seen continues, while the second increases; and, when the eye is over the centre of the edge, and in the plane of the diagonal of the cube, both sides will appear equal trapezoids. In no case can the edge appear greater than its dimensions, or the width of the united trapezoids greater than the diagonal of the cube. In isometrical, or orthographical, projection, nothing can justify any excess of the real dimensions, as shown by J. R. in the article alluded to; and, in perspectronometry (formerly called linear perspective), the projection can never equal the original dimensions, except in geometrical projection, as I distinguish it from perspective projection in my treatise. Mr. Sopwith says (II. p. 521.) that all those who answer the query at the head of his (J. R.'s) paper in the affirmative (? negative) are blockheads! Without knowing J. R. had been guilty of telling the *truth*, I published my original method of projecting objects in perspective, without the use of vanishing points; that method explaining what the principles of perspective have not been made by former writers. I am now proud to acknowledge myself a blockhead of the class Mr. Sopwith so calls.

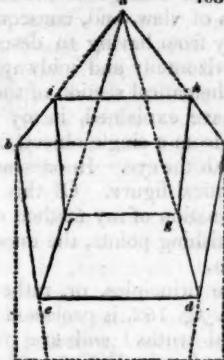
Mr. Sopwith plainly misconceives the perspective plane of projection, and the parallel plane of projection: he sees no distinction between the one lying before, and the other behind, the object, and the difference between the light emitting, and the eye receiving, the projecting rays. In the latter case, the eye *cannot* receive a distortion; in the former, the natural contour is distorted by the position of the *receiving* surface; the shadow on which is like the perspective contour, while the surface is parallel with the plane of the picture, and unlike when the surface distorts the natural appearance: in all cases, however, as has been shown, rays of light and visual rays are projected according to the "laws of nature," in pyramidal or conic form.

As I have advanced a doctrine of perspectronometry on the principles of natural vision, which is directly opposed to the opinions of Mr. P. Nicholson, Dr. Brook Taylor, and all other writers on perspective, for the sake of mathematical truth, and the diffusion of useful knowledge, I here annex two sketches (*figs.* 162. and 163.) of a cube in perspective, from the same point of station, and the same point of view over that station. *Fig.* 162. is the representation which Dr. Brook Taylor, Mr. Nicholson, Mr. Bradley, and all other distinguished and eminent professors, have pronounced to be mathematically correct; and *fig.* 163. is the representation which nature and the prin-

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ciples I have exemplified in my treatise, show to be the true and only optical effects. From this point of view two sides are seen; consequently, the faces of the cube projecting pyramidal rays, with eccentric sides, as just explained, the mathematical and optical bases differ; the former being a square, the latter a trapezoid; and the other side projects a less trapezoid, because the angle of inclination of the middle ray is less than the angle of the middle rays to the other side; also, the vertical angle of which the two diagonal points form the base is somewhat less than the angle of a side viewed perpendicular to the centre, or, as I term it, geometrically.

The contrast of these two figures will draw the attention of the lovers of truth to this subject; the one being a true mathematical section, and the other a true perspective section, of the cube from a chosen point. From the point of sight *a*, the trapezoids *b, c, i, h* are identical; but the mathematical squares *b, c, d, e*, and *i, f, g, h*, form in the eye the trapezoids *b, c, d, e*, and *i, f, g, h*, assuming that the eye is at *a*, above the plane *b, c*, and its parallel plane *d, e*; by which construction *b, e* and *c, d* (*fig. 162.*) are reduced to *b, e* and *c, d* (*fig. 163.*) In order to show that the latter is mathematically, as well as optically true, turn the diagram so that *b, c* forms a perpendicular, and the point of sight *a* is on a horizontal line bisecting *b, c*, the cube reposing on the base *d, e, h, g*. Have we not then the true perspective figure which would be set up, in such a case, by the existing theories, with vanishing points, and starting with the geometrical altitude of the cube *b, c*, which intersects and produces the apparent perpendiculars *d, e, g, f*, and *h, i*, and the angular lines *b, e, g, d, i, f*, and *h, g*? It has escaped the notice of every professor of the art, that the change of delineating, or the nominal position,

makes no change in the relative positions of the objects and points of view, and, consequently, no change in the effect: yet, simply from having to describe the object from above, instead of horizontally and midway, the truth has been distorted, and a mathematical section of the rays substituted.

I have explained, in my work, the difference of the optical effect from a single object, from that of two or more in connexion with the eye. In one case, this mathematical figure becomes the optical figure. Of this first published truth must follow an examination of my method of producing objects without the use of vanishing points, the importance of which is, as yet, but little known.

The principles, or, rather, I should call them *methods*, by which *fig. 162.* is projected universally pass for truths, mathematical truths! and are propagated by all the talent of the Society for the Diffusion of *Useful Knowledge*. Lovers of the fine arts look to this matter, and let every "transcendental" mathematician withdraw his name from among the advocates of mathematical misapplication. A plate of the "perspectronometer" (an instrument I have invented to render the principles of vision manifest to those persons who are unacquainted with geometry) will go far to establish the truth of my observations, and the necessity of substituting the principles I set forth for those that have hitherto passed current.

In the note I send herewith you will see that Mr. Etty, R.A., speaking of this instrument, says, "It very clearly and satisfactorily elucidates the principles of perspective."

Description of the Perspectronometer. — *Fig. 164.* is the instrument; $a\ b$ and $a\ c$ are brass rods of equal lengths; $b\ d$, a steel rod produced from b ; $b\ c$, dotted, another steel bar, equal to $b\ d$, screwed into b , and just entering the cock at c . Under the steel bar $b\ c$, lies a slip of brass of the same length, working on a centre at c , and having a cock fixed at the end b , through which the steel rod $b\ d$ traverses. A line ($c\ e$) is produced to e ; $c\ e$ being equal to $b\ c$: the arc $b\ e$ is described with the radius $c\ e$, and another arc is described between b and c , with the radius $a\ b$ or $a\ c$. On moving the cock b along the steel bar $b\ d$, until it is perpendicularly over c , the line $a\ b$ descends, the angle decreases, and the steel bar $b\ c$ is projected a small piece through the cock at c . On moving the cock b , until the brass slip $b\ c$ forms an obtuse angle of 120° with $a\ c$, a greater quantity of the steel bar is projected through the cock c (as shown in *fig. 165.*); and, on bringing the cock to e (as in *fig. 166.*), the whole of the steel bar $b\ c$ is projected through c , and the two lines $a\ b$ and $a\ c$ fall on each other, making a line with $c\ e$. Now, let a be an eye, $a\ b$ and $a\ c$ rays of equal length projected from the object $b\ c$: it is evident $b\ c$ cannot subtend a

Hence, it is evident, as the line or object $b c$ subtends the greatest angle when it forms the base of an isosceles triangle with the rays $a b$ and $a c$, it is seen of its geometrical length, and the axis of vision is equal to the altitude of the triangle: also, as, when the same line forms a right angle with the rays, it does not subtend so great an angle, and the axis of vision is not the altitude, consequently, it cannot appear so great as when it subtended a greater angle; for, according to the true elucidation of vision, the mind is not susceptible of the unequal extension of rays, but the object is projected through a plane which equalises them; and that plane is always the chord of an arc described by a radius equal to the shorter ray from the extremes of a line. With a line only, the rays to the extremes form a triangle; with many lines, as in one or more objects, the rays form conic or pyramidal rays; in which case, the plane of optical projection follows the same simple law vertically and horizontally; the vertical line of projection and the horizontal line of projection being the transverse direction of the plane of projection, always touching the nearest point or surface of the objects viewed.

This vertical line of projection forms a new and important feature in my art of "perspectronometry," which is a fitter name for the art than perspective; for it signifies the science of measuring the apparent lengths of mathematical lines. We never see a form! we only see forms in appearance. An object has but one form; and, when seen or represented from a given point, we see or represent only one peculiar appearance of those parts which are visible to the eye, inferring by our previous knowledge what constitute the unseen parts; so that, in speaking of seeing a form, according to popular conception, there is an universal error. In reality, by natural inference, I should say we only see the forms of appearances; which forms are the legitimate features for perspective to portray with accuracy.

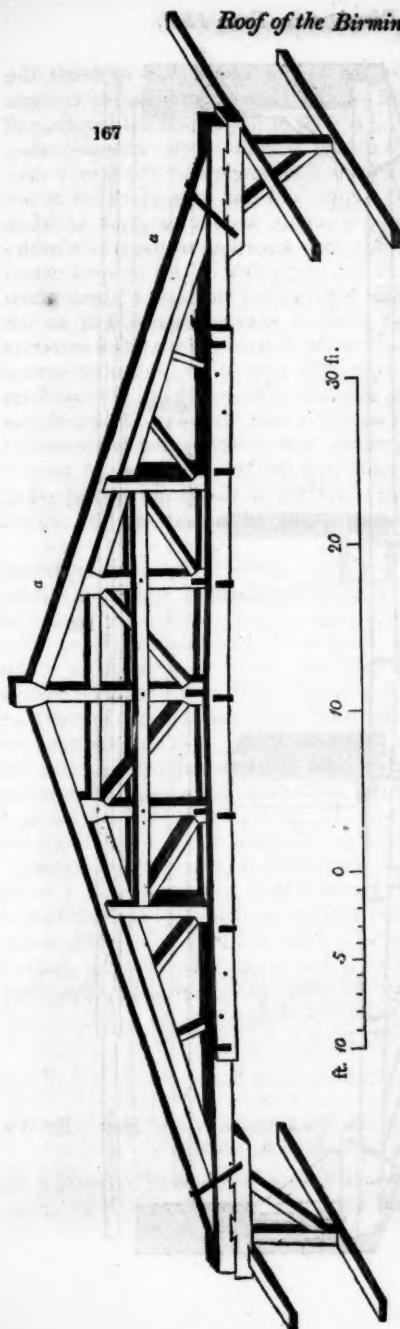
The gentlemen whose names I have mentioned will, I trust, acquit me of any personal motives in doing so, and attribute it to my desire to see the art I profess not only established on demonstrable optical principles, but to see it become the study of every well-educated man, forming, as it does, the elementary science of general and useful knowledge.

Strand, London, July 23. 1836.

ART. V. *On the Roof of the Birmingham Town Hall.* By WM. KENDALL, Esq., Kineton.

A GOOD deal of discussion having taken place respecting the Birmingham Town Hall roof, and more especially in conse-

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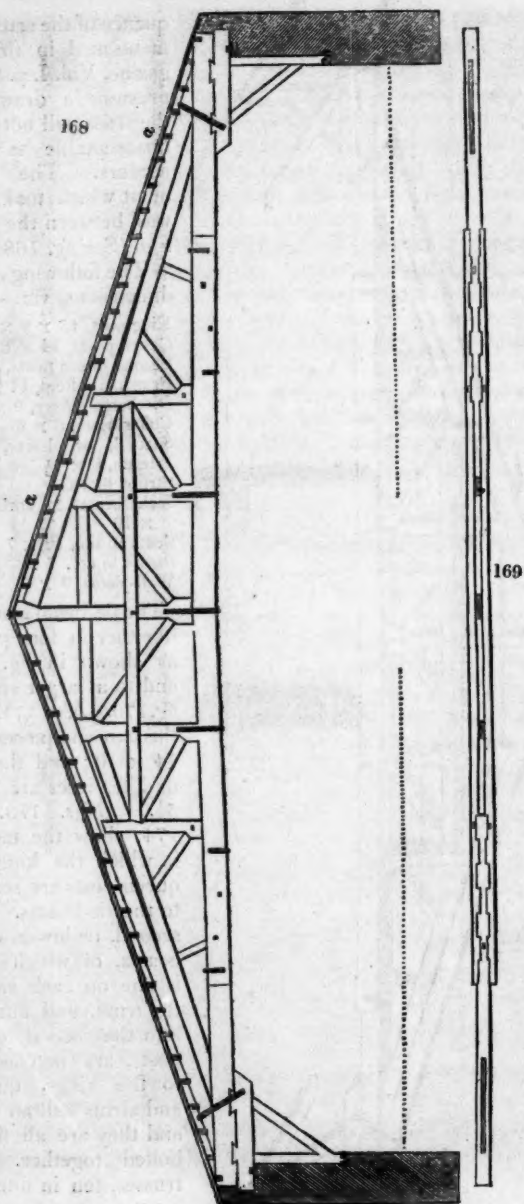


quence of the settlement mentioned in this Magazine, Vol. I. p. 380., I presume a drawing of the truss will not prove unacceptable to your readers. The settlement which took place was between the points *a a*. (See fig. 168.)

The following are the dimensions, viz: —

King post, $15 \times 9 \times 6$
 Queen posts, $14 \times 8 \times 6$
 Second queen posts, 14×9
 Principal rafters, 11×6
 Discharge rafters, 9×6
 Collar beam, 8×6
 Second, or lower, collar beam, $8 \times 4\frac{1}{2}$
 Struts, 6×6
 Jack beams to corbels, 14×10
 Posts to do., 10×7
 Struts to do., 7×7
 Wall-plates, 9×6

The tie-beam is scarfed together in four pieces, as shown in *fig. 166.*, and to a larger scale in *fig. 170.* *Figs. 171, 172.*, the two end pieces, are 14×10 ; and the two middle pieces are $14 \times 5\frac{1}{2}$. *Figs. 173.* and *174.* show the method in which the king and queen posts are secured to the tie-beams. The second, or lower, collar beams, of which there is one on each side of the truss, and abutting into the second queen posts, are notched on to the kings, queens, and struts half an inch; and they are all firmly bolted together. The trusses, ten in number,





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are 12 ft. apart; except the two end trusses, which are 14 ft. from the outer walls. Joists, $7 \times 2\frac{1}{2}$, and 15 in. apart, notched on to the trusses (see *fig.* 168.), run the whole length of the building; these laid with inch boarding, and the whole covered with 7 lb lead. The whole of the timber used is good sound Baltic; except the king posts and queen posts, which are of good sound English oak. The span is 65 ft. 6 in. in the clear. *Fig.* 167. is the truss in isometrical perspective, and will convey a clearer idea of its construction.

I, having been a party concerned in the execution of this roof, refrain from all comment as to the soundness of the principle upon which it is constructed, or of its suitability or unsuitableness for the Birmingham Town Hall.

It was designed by Mr. Joseph Hansom, one of the architects of the building; and he thinks (or did think, at the time the roof was framed) so highly of it, as to imagine that nothing in the way of carpentry has appeared equal to it in modern times. This opinion I leave entirely to the judgment of the readers of this Magazine.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

HOUSE of Commons, and the New Houses of Parliament. — It does not often happen that any matter immediately, or even remotely, connected with architecture forms a topic of parliamentary discussion; but the debate on Mr. Hume's motion (July 21.) relative to the intended new Houses of Parliament was one of particular interest in itself. Although the member for Middlesex did not carry his point, which was nothing less than to set aside the whole of the previous proceedings, and begin *de novo*, and, consequently, the business remains substantially where it was, the discussion was by no means a fruitless one, since it afforded several members an opportunity of vindicating the commissioners from the obloquy cast upon them, both on account of presumed incompetence for their office, and unfairness in the discharge of it. Those who have seen the exhibited drawings must allow that the commissioners' task was one of considerable labour, and that they acquitted themselves of it very satisfactorily; since, with the exception of some few, though noisy, malecontents, the public have confirmed their sentence as far as regards Mr. Barry's design; and by the public I mean those who are capable of judging of its general merits, although they may not be exactly competent to enter into a formal architectural analysis of it. So far the excellence of Mr. Barry's design may be allowed to be of a superior kind; for, as a glance at most of our modern buildings will convince us, it is easier to meet with such as are technically not objectionable, than with any which captivate the critical observer by any qualities as works of art.

After being subjected to a more rigorous ordeal than any of the others, because far more minutely and invidiously scrutinised by those who were eager to detect and drag forward every fault, however trifling, Mr. Barry's design has infinitely more to recommend it than any of the others, against the majority of which nothing has been specifically objected, for the reason that they

do not present any thing so strikingly good as to render it worth while to examine them, for the purpose of noting separately all their recommendations and deficiencies; otherwise they would, probably, have been found to possess as many, or more, errors; errors, too, still more objectionable than those imputed to Mr. Barry's, without any of its redeeming qualities.

Some have made it ground of complaint, that Mr. Barry should be allowed to deviate from his original drawings, for the purpose of introducing alterations and improvements; which they consider a species of unfairness: so it undoubtedly would be, had the prize been awarded to him for a design of doubtful merit, and only then entitled to it after being tampered with, in order to fit it for public inspection, and justify the preference given it. The original design having been exhibited, the case is otherwise: the public are satisfied that the preference was a just one. Although the design is the best, it would, as Sir Robert Peel observed, be absurd, on that account, to prevent the architect from improving it, and giving to his first ideas all the perfection he is able. Undoubtedly, any of the other architects would now (especially after what he must have learnt from studying the designs of his fellow-competitors) be capable of greatly improving his also, had he first won the opportunity of doing so. Failing in that primary object, no architect can justly complain that he has also missed the privileges annexed to it.

So far is it from being desirable that an architect should be bound down to adhere to his first design for a building, which can rarely be maturely studied throughout, that much which is defective in our public buildings may safely be attributed to the neglect of careful revision. Though the general idea, and many of the parts, may be good, much may require to be retouched and polished up, so as to produce a finished work.

Sir Robert Peel's testimony in favour of the commissioners and Mr. Barry is not at all weakened by his declaring that he was originally opposed to a public competition, thinking that government ought to have chosen their own architect, and that by so doing they would be more likely to secure a plan that would reflect credit on the nation. "An eminent architect," he said, "had devoted his time for several months to the preparation of a plan; but it was thought proper that there should be a competition." From this we may infer, that that "eminent architect," whoever he was (and it is not difficult to guess at him), did not care to encounter the risk of a defeat, although he would have had the advantage over his rivals as to time, having the start of them by several months; and yet, a person who so mistrusted himself as to be discouraged from entering into any contest with others, was a fit person to have been entrusted by government with designing and executing an architectural work of such importance! This is rather odd argument; and it may be assumed that the design alluded to by Sir Robert Peel has no extraordinary merit to boast of, otherwise its author would, doubtless, have adopted some mode of bringing it before the public, and so showing the world what a piece of excellence the unfortunate system of competition had deprived it of.—*L.* July 23.

Mr. Peter Thompson's Model of his Design for the New Houses of Parliament.—Our readers will bear in mind the review of Mr. Thompson's publication, p. 178., and Mr. Thompson's remarks on that review, p. 284. We may also state that, soon after the appearance of Mr. Thompson's book, a review of it appeared in the *Times* newspaper; apparently written with a view to discourage carpenters or builders, like Mr. Thompson, from attempting to infringe on the province of the architect. The extreme severity, coarseness, and bad feeling displayed in this review, as is usual in similar cases, defeated its own purpose; and, instead of injuring Mr. Thompson, it has, in fact, been of the greatest service to him. A weak-minded man might have suffered from it, or, perhaps, sunk under it; but Mr. Thompson is a man naturally of a very strong mind, of indefatigable industry, and of undaunted mental courage. The first effect which the review in the *Times* had on him was, to determine him to construct a model. After the model was finished, Mr. Thompson

took it down to Windsor, and had the honour and satisfaction of showing it to their Majesties and the royal family. This took place on July 4.; and Mr. Thompson kindly invited us to see it on the 5th instant. Another effect of the review in the *Times* was, to attract the attention of some gentlemen connected with a new colony; in consequence of which Mr. Thompson has received a large order for portable wooden dwelling-houses, 41 of which he has already shipped, and with the remainder of which (besides a banking-house of two stories high, and a portable church, for the same colony, 80 ft. long, 45 ft. wide, and 40 ft. high to the top of the spire) he is employed literally night and day.

The model is beautifully executed; and, as explained by Mr. Thompson, shows a great deal of contrivance and arrangement in the interior; though we cannot say that we were more pleased with the elevation in it, than we were with it in the engravings. We strongly recommend all our readers, who have an opportunity, to call and see it; if only for the sake of becoming acquainted with Mr. Thompson, and learning from his conversation how much may be done by a man, having no adventitious advantages of education or fortune, in improving his mind, and also his worldly circumstances. The model is exhibited gratis in Mr. Thompson's shop, which is in Osnaburgh Place, New Road, near Fitzroy Square, exactly opposite Mr. Austin's Artificial Stone Manufactory, a museum of architectural sculpture also well worth seeing.

Mr. Thompson has infringed on the booksellers, as well as on the architects; for he has established in the portico, or entrance-hall, to his manufactory, a bookseller's shop, well stored with old and new books, and containing stationery and architectural prints for sale. Mr. Thompson was led to this by endeavouring to collect for himself a good library of architectural works; to enable him to do which, he bought up books of every kind, wherever he could find them a decided bargain; and afterwards exchanged them for the books he wanted, as opportunity offered. Finding the purchase and sale of books by retail, for ready money, attended with very little trouble, and that it could be managed by one of his family, he continued it; and, as he is an advocate for lowering the price of books, and more especially architectural books, some of our readers may find it worth their while to call on him as a bookseller. Others, who have houses to build, or carpenter's work to perform, will, if we are not very greatly mistaken, find him a treasure in either of these capacities.

The Close of the Exhibition of the Designs for the New Houses of Parliament took place on July 23. The sum collected was somewhat above 1500*l.*, and the expenses above 500*l.*; thus leaving about 10*l.* to each exhibitor. Before the exhibition was closed, the exhibitors had a meeting, at which letters were read from Edinburgh, Birmingham, and some other considerable towns, requesting that the designs might be exhibited at those places; and it was resolved that, as far as depended on the meeting, the designs should be sent to Edinburgh for the purpose of exhibition. Two lithographic prints, showing the original and altered plans of Mr. Barry, were exhibited; which, together with several pamphlets, either published, or to be so, will be noticed in a future Number.

New Churches.—Fifty new churches or chapels are in contemplation, to be erected in the most populous parts of the metropolis and its suburbs. The Bishop of London is at the head of the project; and subscriptions for carrying it into execution are going on in various parts of the country; upwards of 50,000*l.* having been already collected. Government is expected to aid the undertaking; and I have little doubt that many new churches and chapels will be erected; but I hope an open and fairly conducted competition will be resorted to, and that in no one instance will a favourite be called in. Churches are public buildings, and, therefore, ought to be competed for.—*Tyro. Wilmington Square.*

London University.—A handsome statue of Locke, executed in marble by R. Westmacott, R.A., has just been completed, and placed in the vestibule of the London University.—*Id.*

SCOTLAND.

Churchyard Architecture.—Every one who has visited the ancient burying-grounds within and about Edinburgh must have observed the total absence of every thing like method in laying out the grounds, and the almost equal absence of harmony between contiguous monumental edifices. Of late years, a new spirit seems to have sprung up in the neighbourhood. A considerable addition was made, some time ago, to the West Churchyard, which, situated as the addition is, close by the Castle Rock, and adjoining the Prince's Street Gardens, to the height of 20 ft., has a fine effect, particularly as it is laid out after a regular plan. The tombs are all built, and, as a striking instance of the previous want of churchyard accommodation, nearly one third of these tombs are already taken up, although it is but four years since this new ground was first opened. This cemetery, besides its other advantages, is in so secluded a situation, that the monuments erected in it are not subject to be soiled and tarnished by smoke. (*The Scotsman*, January 27. 1836.)

Bread-cutting Machine.—This is a newly invented machine for cutting loaf bread, the credit of which is due to Mr. Blaikie, an ingenious gun-maker in Glasgow. In its machinery it is quite plain and simple; and nothing could well be more easy and satisfactory than its operation. The loaf being placed in the proper receptacle, the operator raises the handle of the machine; when, by a simultaneous motion of the internal machinery, the loaf is shifted forward to the proper place, the size of the slices having been previously determined by fixing the index hand of the regulator at the desired distance. The handle being then brought down, the slice falls into a box beneath. A quartern loaf may be cut in this manner in half a minute; and cut, too, as smooth and even almost as polished marble, and without breaking it into crumbs, as is unavoidably the case by cutting bread in the ordinary way. (*Id.*)

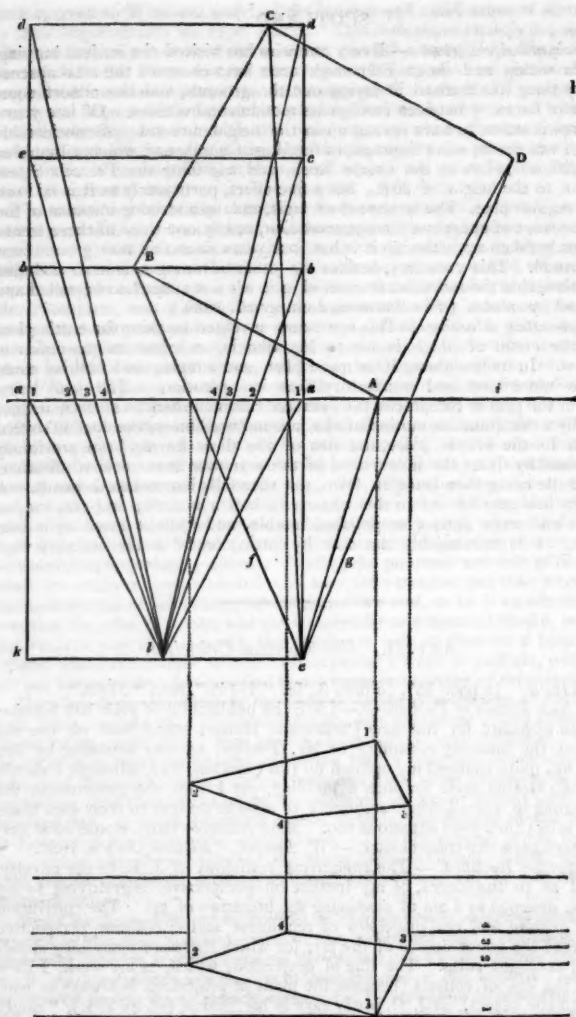
ART. II. Retrospective Criticism.

ERRATUM. In page 357. column 3., for "11½ lb.," read "11¼ lb."

The New Houses of Parliament.—Until the publication of your last Number I was an advocate for the new Parliament Houses being built on the old site; but the masterly reasoning of Mr. Fowler, so ably seconded by Mr. Rainy, has quite changed my opinion on this question; and, although I should prefer the Gothic style for such a building, yet I think the government did quite wrong in not allowing architects to send in designs to their own taste, and to select their own situations too. Many valuable hints would most certainly have been the consequence.—*W. Kendall. Kineton, July 8. 1836.*

Perspective Rectified.—The concurring testimony of J. R. to the novelty, as well as to the merits, of my treatise on perspective, is gratifying to my feelings, desirous as I am of advancing the literature of art. The cultivation of the definite and real principles of rectilinear and curvilinear perspective will rectify the minor details of the art, for which there are many long standing and excellent rules. The line of projection, which, in my work, I have termed the line of contact (because the plane of projection is always in contact with the object), as J. R. justly says in his review (iii. p. 274.), "ought to be exhibited to the learner in the most prominent manner."

I beg to point out an error which your engraver has inadvertently made in misplacing this line in the plate copied from my work (fig. 117. p. 273.). By substituting the accompanying cut (fig. 175.) for the incorrect one in question, you will oblige me, as the adjustment of the line of projection has been capricious, and is one of my leading points of rectification. In the figure, A B C D is the ground plan of a cube; e, the point of station; f, g, the visual

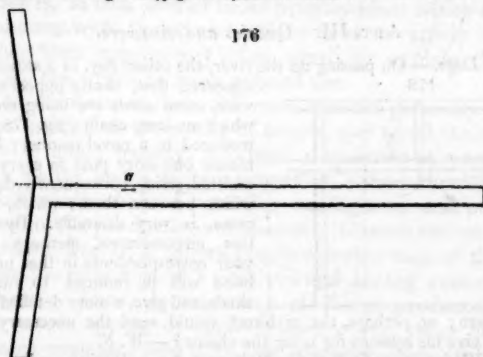


rays; $c d$, the axis of vision; and, as I have demonstrated, the line of projection ($a i$) must be drawn at right angles to the axis ($c d$), so that it may project with optical, as well as with mathematical, truth. The point relative to the planes for the perspective altitudes 1 1, 2 2, 3 3, 4 4, your readers will find explained at length in my treatise, as well as the introduction of another essential line, the vertical line of projection; which line, together

with the horizontal line of projection, makes the plane of projection easy of comprehension, and practically true.

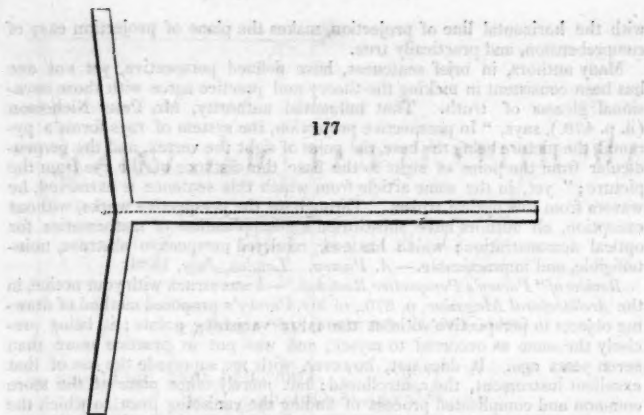
Many authors, in brief sentences, have defined perspective, yet not one has been consistent in making the theory and practice agree with those occasional gleams of truth. That influential authority, Mr. Peter Nicholson (ii. p. 479.), says, "In perspective projection, the system of rays forms a pyramid, the picture being the base, the point of sight the vertex, and the perpendicular from the point of sight to the base the distance of the eye from the picture;" yet, in the same article from which this sentence is extracted, he wavers from this optical truism. Throughout the perspective works, without exception, all authors have substituted a misapplication of mathematics for optical demonstration; which has ever rendered perspective abstruse, unintelligible, and impracticable. — *A. Parsey. London, July, 1836.*

Review of "Parsey's Perspective Rectified."—I was struck with your notice, in the *Architectural Magazine*, p. 270., of Mr. Parsey's proposed method of drawing objects in perspective without the aid of vanishing points; it being precisely the same as occurred to myself, and was put in practice more than seven years ago. It does not, however, with me supersede the use of that excellent instrument, the centrolinead; but merely takes place of the more common and complicated process of finding the vanishing lines to which the centrolineads are to be adjusted. I use the original plate and screw instruments; but Mr. Nicholson has long since simplified this invention; although, as far as I am aware, he still places one edge of the ruler so as, if produced in that direction, it would meet the angle formed by the two arms at the back, as in the annexed diagram (*fig. 176.*); whereas the instruments are better



constructed, and equally efficient, by placing the ruler centrally, as in *fig. 177.* Indeed, if otherwise convenient, it matters not precisely where the ruler is placed; as, provided it bears the same relation to the arms in all positions of the instrument, it must describe equally correct radii; so that, instead of its use being confined to the right or the left hand, according to the position of the ruler's edge (*a, fig. 176.*), which, however, is not necessary with any, it may be used indifferently. Further, by adding another pin, as circumstances may require, the same instrument may be adjusted to two very different degrees of converging lines; and, therefore, be made to serve for the right and left at the same time.

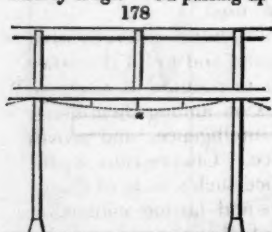
I have no doubt whatever of the merits of the work above mentioned: but I have long since thought that much more has been written on the subject of perspective than is useful; for, if the principle be once understood, no proposition can occur in its practice that will not, by a thinking person, be easily solved; and I do believe that one or two lectures, aided by models, as well



as diagrams, would be more effectual in putting any one in possession of that principle, than all the voluminous works that have been published on the subject.—*E. W. Gribble. Torquay, Devon, June 8. 1836.*

ART. III. Queries and Answers.

ISLE of Dogs.—On passing up the river, the other day, in a steam-boat, I



observed that, nearly opposite Greenwich, some sheds are being erected, in which an iron chain (*fig. 178. a*) is introduced in a novel manner; by which means one story post in every three is omitted, giving, consequently, double the width between them; which, in many cases, is very desirable. By noticing this circumstance, perhaps some of your correspondents in that neighbourhood will be induced to view these sheds, and give a more detailed description of them; or, perhaps, the architect would send the necessary information, and give his reasons for using the chains?—*W. S.*

Captain Wildey's new Stuffing for Mattresses, &c.—Having read a good deal respecting this material in the *Brighton Gazette*, at different periods, I should feel much obliged to you, or to any of your readers, if you could tell me what the material is.—*John Brown. Fore Street, Brighton, July, 1836.*

A correspondent and contributor to the *Encyc. of Cott. Arch.*, to whom we sent this query, has returned us an answer, containing details too long for insertion here, but which we shall give in our next Number. In the mean time, we may state, for Mr. Brown's information, that Captain Wildey's substitute for horsehair, straw, flock, cotton, *A'lga marina*, and various other substances in general use for bedding, mattresses, pillows, chairs, sofas, carriage seats, &c., is the fibrous coating of the cocoa nut, which has already been long in use for the same and other purposes in the East Indies and China. It appears to us a very excellent material for the uses to which it is to be applied, and we would strongly recommend it to the attention of upholsterers, and all persons engaged in providing cheap and durable stuffing for bedding, sofas, chairs, &c.